MCNEESE STATE UNIVERSITY
PHYSICAL SCIENCE 111

Physical Science 111 **Lec. 3 Cr. 3**

COURSE DESCRIPTION: A continuation of Physical Science 101 with detailed emphasis on chemical processes, organic chemistry, meteorology, and geology. Designed for the non-physical science major. Duplicate credit will not be given for PHSC 111 and CHEM 101, CHEM 121-122 or GEOL 101-102.

COURSE SYLLABUS

Heating the atmosphere (Chapter 11 - p. 271)
- Weather and climate
- Composition of the atmosphere
- The ozone problem
- Height and structure of the atmosphere
- Earth-Sun relationship: Earth's rotation and revolution; seasons; solstices and equinoxes
- Mechanisms of heat transfer
- The greenhouse effect
- Global warming - geographic position - cloud cover and albedo

Clouds and precipitation (Chapter 12 - p. 299)
- Change of state: latent heat; sublimation; humidity in the air; stability of air
- Cloud classification
- Fog - precipitation - collision - forms of precipitation

The atmosphere in motion (Chapter 13 - p. 327)
- Measurement of air pressure
- Factors affecting wind
- Pressure gradient force
- Coriolis effect
- Friction with Earth's surface
- Cyclones and anticyclones
- General circulation (circulation on a non-rotating Earth; idealized global circulation; influence of continents; circulation in the mid-latitudes
- Local winds (sea and land breezes; valley and mountain breezes; Chinook and Santa Ana winds)
- How wind is measured

Weather patterns and severe weather (Chapter 14 - p. 347)
- Air masses - source regions
- Weather associated with air masses
- Fronts (warm fronts; cold fronts)
- The middle-latitude cyclone (idealized weather; the role of airflow aloft)
- Thunderstorms (thunderstorm occurrence)
- Tornadoes (tornado occurrence and development; general atmospheric conditions)
- Profile of a tornado (tornado destruction; prediction of tornadoes)

Hurricanes (profile of a hurricane; hurricane formation and decay; hurricane destruction)

Atoms, ions, isotopes

Minerals - crystals

Definitions; physical properties; mineral groups (non-silicates and silicates)

Silicates (definition; silicon-oxygen tetrahedron; classification of silicates)

Mineral resources (reserves; ore-definition; industrial rocks and minerals; Bingham Canyon copper mine - p. 24)

Rocks

Rock cycle

Magma (crystallization; Bower's reaction series - pg. 35; igneous rocks)

Sediment (lithification, sedimentary rocks - p. 37)

Metamorphic rocks (types; P-T involvement; foliation vs. stratification)

Weathering (mechanical and chemical; formation of sediments - soils-profiles)